

What is claimed is:

1. A curing composition comprising:

(A) a polymerizable cyclic structure-containing component comprising

a compound (a-1) having at least two polymerizable cyclic ether structures in a molecule and, if necessary,

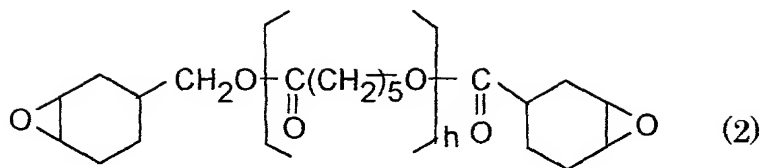
a compound (a-2) having one polymerizable cyclic structure in a molecule, and

(B) 0.01 to 5 parts by weight, per 100 parts by weight of the above component (A), of a metal triflate,

the above polymerizable cyclic structure-containing component (A) having an average polymerizable cyclic structure equivalent (number average molecular weight/number of polymerizable cyclic structure in a molecule) falling in a range of 100 to 1000, and the metal triflate (B) being triflate of metal selected from scandium, yttrium, lanthanoid series metals, actinoid series metals, magnesium and zinc.

2. The curing composition as described in claim 1, wherein the compound (a-1) is a compound having an oxirane ring and/or an oxetane ring.

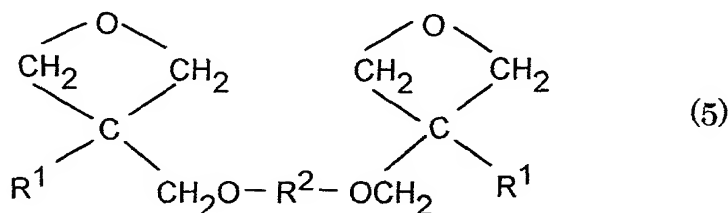
3. The curing composition as described in claim 2, wherein the compound having an oxirane ring is selected from the group consisting of (3,4-epoxycyclohexyl)methyl-3,4-epoxycyclohexanecarboxylate, bis(3,4-epoxycyclohexylmethyl) adipate, bis(3,4-epoxycyclohexylmethyl) ether of ethylene glycol, Epolead GT300, Epolead GT400, compounds represented by the following formula (2):



(h is an integer of 1 or more)

and the homopolymers or copolymers of 3,4-epoxycyclohexylmethyl (meth)acrylate or the caprolactone-modified compound of 3,4-epoxycyclohexylmethyl (meth)acrylate.

4. The curing composition as described in claim 2, wherein the compound having an oxetane ring is a compound represented by the following formula (5):



wherein two R¹'s may be the same or different and represent a hydrogen atom or an alkyl group having 1 to 4 carbon atoms; and R² represents an alkylene group having 1 to 6 carbon atoms, a cycloalkylene group having 4 to 7 carbon atoms, a phenylene group, a xylylene group, a hydrogenated xylylene group or a polyalkyleneoxy group having 4 to 30 carbon atoms.

5. The curing composition as described in claim 2, wherein the compound having an oxirane ring and oxetane ring is 3-ethyl-3-(3,4-epoxycyclohexylmethyl)-oxymethyloxetane or 3-ethyl-3-glycidyloxymethyloxetane.

6. The curing composition as described in claim 1, wherein the compound (a-1) is an oxirane compound having 2 to 50 alicyclic epoxy groups in a molecule.

7. The curing composition as described in claim 1, wherein the compound (a-1) has a number average molecular weight falling in a range of 140 to 50,000.

8. The curing composition as described in claim 1, wherein the compound (a-1) has a polymerizable cyclic ether structure equivalent (number average molecular weight/number of polymerizable cyclic ether structure in a molecule) falling in a range of 70 to 3,000.

9. The curing composition as described in claim 1, wherein the polymerizable cyclic structure in the compound (a-2) is a cyclic ether structure, a cyclic ester structure, a cyclic amide structure or a cyclic iminoether structure.

10. The curing composition as described in claim 1, wherein the compound (a-2) has a number average molecular weight falling in a range of 70 to 1,000.

11. The curing composition as described in claim 1, wherein the compound (a-2) is selected from the group consisting of oxiranes, oxetanes, oxolanes and lactones.

12. The curing composition as described in claim 1, wherein the polymerizable cyclic structure-containing component (A) has an average polymerizable cyclic structure equivalent falling in a range of 120 to 700.

13. The curing composition as described in claim 1, wherein the polymerizable cyclic structure-containing component (A) comprises the compound (a-1) of 20 to 100 parts by weight and the compound (a-2) of 0 to 80 parts by weight each per 100 parts by weight of the total of the compound (a-1) and the compound (a-2).

14. The curing composition as described in claim 1, wherein the polymerizable cyclic structure-containing component (A) comprises the compound (a-1) of 40 to 100 parts by weight and the compound (a-2) of 0 to 60 parts by weight each per 100 parts by weight of the total of the compound (a-1) and the compound (a-2).

15. The curing composition as described in claim 1, wherein the metal triflate (B) is zinc triflate.

16. The curing composition as described in claim 1, comprising the metal triflate (B) of 0.01 to 2 parts by weight per 100 parts by weight of the polymerizable cyclic structure-containing component (A).

17. The curing composition as described in claim 1, further comprising water.

18. The curing composition as described in claim 17, comprising water of 0.1 to 250 parts by weight per 100 parts by weight of the polymerizable cyclic structure-containing component (A).

19. The curing composition as described in claim 17, wherein the polymerizable cyclic structure-containing component (A) is dispersed in water.

20. A method for forming a cured coating film, comprising applying the curing composition as described in claim 1 and curing it by heating.

21. A method for forming a cured coating film, comprising applying the curing composition as described in claim 1 on an uncured thermosetting colored layer and then curing it by heating.

22. The method as described in claim 21, wherein the colored layer is formed by applying a water-based color coating composition.

23. The method as described in claim 21, wherein the colored layer is formed on a car body.

24. The method as described in claim 21, wherein the curing composition as described in claim 1 is used for a coating composition.

25. A cured coating film formed from the curing composition as described in claim 1.

26. A coated article obtained by using the curing composition as described in claim 1.